

# PATENT SPECIFICATION

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DRAWINGS ATTACHED

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## COMPLETE SPECIFICATION

### Improved Ultraviolet Radiation Source

We, DESAGA LABOR-TECHNIK G.M.B.H., a German Body Corporate of Hauptstrasse 60, Heidelberg, Germany, do hereby declare the invention, for which we pray that a patent 5 may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 The present invention relates to an ultraviolet radiation source which can be used as a universal laboratory device, which is particularly suitable for fluorescent excitation of substances on thin layer chromatograms and paper chromatograms. Its compact construction permits its application to all evaluation processes in connection with fluorescent analysis.

15 According to the invention there is provided an ultraviolet radiation device, particularly for fluorescent excitation of substances on thin-layer chromatograms, and paper chromatograms, comprising a housing, which has on its upper surface a cut-out for inserting a diffusing screen on which the chromatogram to be observed is placed, a daylight luminescent tube arrangement located under the screen and also electrical accessories, such as preswitching appliances, starters, mains connections, combination switches with 20 corresponding wiring and signal lamps, at least one arm fixed on a least one side of the housing, the arm having a reflector at one end, which can be adjusted vertically and transversely and inclinably, the electrical equipment of the reflectors consisting of at 25 least one special luminescent tube for long-wave ultraviolet radiation of 365 mu and/or at least one special luminescent tube for short-wave ultra violet radiation of 254 mu. The term "daylight luminescent tube" used herein is defined as a discharge tube producing a light distribution corresponding to that of daylight.

25 A specific embodiment of the present invention will now be described by way of

example with reference to the accompanying drawing.

A preferably rectangular housing 1, preferably made of a light metal casting, has, on its upper surface, a preferably square cut-out for inserting a diffusing screen 1a, preferably of white polyacryl glass ("plexiglas" registered Trade Mark), on which the chromatogram to be observed is placed. Below this is a daylight luminescent tube arrangement 6, preferably having three daylight luminescent tubes, and there is also located here the electrical accessories, such as the switching appliances, starters, mains connections and the wiring for the combination switches 7 and the signal lamps 8. On each side of the housing 1 is fixed a preferably flexible arm 2, which in each case carries a reflector 3, which can be adjusted vertically and laterally and also as desired inclinably. The electrical equipment of such a reflector consists of a special luminescent tube for long-wave ultraviolet radiation of 365 mu and a special luminescent tube for short-wave ultraviolet radiation of 254 mu; the last-mentioned luminescent tube is fitted with a filter which absorbs the visible radiation. In the drawing the tube for the long-wave ultraviolet radiation is designated by 5 and the tube for the short-wave ultraviolet radiation by 4.

30 The ultraviolet radiation device in accordance with the invention permits the exchange of luminescent tubes successively for ultraviolet light and for daylight. Each tube fits into each socket, that is to say both in the two reflectors 3 and also in the housing 6. This makes it possible to fit one or both reflectors 3 completely with tubes which emit a short-wave ultraviolet radiation or completely with tubes which emit long-wave ultraviolet radiation. In this way the radiation intensity reaches a maximum such as in fact cannot be found with any other ultraviolet radiation source in the present position of the known art.

50 55 60 65 70 75 80 85 90

5 In a preferred embodiment of the subject matter of the present invention, since each reflector 3 has a luminescent tube which emits short-wave ultraviolet radiation and a luminescent tube which emits long-wave ultraviolet radiation. It can be arranged by means of a suitable switch operating device 7 that only long-wave or only short-wave or both long-wave and short-wave ultraviolet radiation 10 act simultaneously on the chromatogram. The signal lamps incorporated by the side of the switch combination indicate by lighting up the identifying colours belonging to the particular wave range, the action of the ultraviolet tubes switched on. 15

20 A diffusing screen 1a produces in this connection a diffuse transillumination of the applied chromatograms from below, that is to say by means of the three daylight luminescent tubes 6.

25 For photochemical de-iodizing of organic iodine compounds, particularly for the study of photochemical processes on thin-layer chromatograms, the three daylight tubes 6 are exchanged for three short-wave ultraviolet tubes.

30 In accordance with a further preferred form of embodiment a clampstand rod 9 is screwed on the housing 1, which clampstand rod carries a holding device 10 which can be moved or locked in three dimensions for all types of camera of known art. By this arrangement particularly satisfactory photographs of fluorescing chromatograms can be 35 taken.

40 According to another preferred form of embodiment the ultraviolet radiation device in accordance with the present invention has on its base coverplate two lugs by which it can be hung from a wall. With this arrangement the device in accordance with the invention can also be used as a lighting device for viewing X-ray films.

45 WHAT WE CLAIM IS:—

50 1. An ultraviolet radiation device, particularly for fluorescent excitation of substances on thin-layer chromatograms, and paper chromatograms, comprising a housing, which has on its upper surface a cut-out for inserting a diffusing screen on which the chromatogram to be observed is placed, a daylight luminescent tube arrangement located under the screen and also electrical accessories, such as preswitching appliances, starters, mains connections, combination switches with corresponding wiring and signal lamps, at least one arm fixed on at least one side of the housing, the arm having a reflector at one end, which can be adjusted vertically and transversely 55 and inclinably, the electrical equipment of the reflectors consisting of at least one special

55 luminescent tube for long-wave ultraviolet radiation of 365 mu and/or at least one special luminescent tube for short-wave ultraviolet radiation of 254 mu. 65

60 2. An ultraviolet radiation device as claimed in claim 1, wherein the housing consists of a light metal casting.

65 3. An ultraviolet radiation device as claimed in claim 1 or claim 2, wherein the luminescent tubes for short-wave ultraviolet light of 254 mu in the reflectors are provided with a filter which absorbs the visible radiation. 70

70 4. An ultraviolet radiation device as claimed in any of claims 1 to 3, wherein the luminescent tubes for ultraviolet and for daylight are interchangeable, and wherein each tube fits into each socket, that is to say both in the reflectors and also in the housing. 75

75 5. An ultraviolet radiation device as claimed in any of claims 1 to 4, wherein each reflector has a luminescent tube for short-wave ultraviolet radiation and a luminescent tube for long-wave ultraviolet radiation, a switch device being provided so that only long-wave or only short-wave or both long-wave and short-wave ultraviolet radiation simultaneously acts on the chromatogram. 80

80 6. An ultraviolet radiation device as claimed in any of claims 1 to 5, wherein the signal lamps, by lighting up the identification colours belonging to the particular wave range, indicate the action of the ultraviolet tubes switched on. 85

85 7. An ultraviolet radiation device as claimed in any of claims 1 to 6, wherein a clampstand rod which has a three-dimensionally movable or lockable holding device for cameras is screwed to the housing. 90

90 8. An ultraviolet radiation device as claimed in any of claims 1 to 7, characterized in that for photochemical de-iodizing of organic iodine compounds and particularly for studying photochemical processes on thin-layer chromatograms the three daylight tubes are exchanged for three short-wave ultraviolet tubes. 95

95 10. An ultraviolet radiation device substantially as described herein with reference to and as illustrated in the accompanying drawing. 100

105 9. An ultraviolet radiation device as claimed in any of claims 1 to 8, characterized in that it has on its base coverplate lugs by which it can be hung from a wall for the purpose of using it as a lighting device for viewing X-ray films. 110

110 11. An ultraviolet radiation device substantially as described herein with reference to and as illustrated in the accompanying drawing. 115

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COMPLETE SPECIFICATION

1 SHEET

*This drawing is a reproduction of  
the Original on a reduced scale*

